

A system and method for the iterative detection and demodulation of M-ary orthogonal signals (MOK) and signals modulated using Complementary Code Keying (CCK) is described. An important feature of these methods is the good performance of noncoherent detectors in AWGN channels. However, the performance of these detectors in fast fading channels degrades considerably compared to that of coherent detectors. Iterative detection algorithms that significantly improve the performance of the demodulators with minimal additional complexity are presented. The methods use soft decoder output feedback and iterative demodulation and decoding to achieve performance close to that of coherent detection. For MOK, significant performance enhancement is possible even without any loss of throughput due to insertion of pilot symbols. For CCK pilot symbols are necessary but the throughput loss remains low.